

10/048105

531 Rec'd PCT/PT 25 JAN 2002

**ABSTRACT OF THE DISCLOSURE**

A catalyst for use in a hydrocarbon fuel processor for converting, or reforming, a hydrocarbon fuel such as diesel into a simple fuel, most especially hydrogen, comprises a rare earth metal (M) cobalt oxide ( $MCoO_3$ ) having a perovskite structure. In one composition, the catalyst comprises a solid solution having the perovskite structure of the rare earth metal cobalt oxide, preferably lanthanum cobalt oxide ( $LaCoO_3$ ), and an alkaline earth metal cobalt oxide, preferably strontium cobalt oxide ( $SrCoO_3$ ). To further enhance the catalytic activity, the catalyst can additionally include a noble metal oxide such as platinum or ruthenium.

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